

Abstract**(54) METHOD FOR ENHANCING EFFECTIVENESS OF
OPERATION OF ROTOR BLADE OF WIND ENERGY DEVICE
(VARIANTS)**

5 (57) The invention relates to wind energy, in particular to wind energy devices
converting wind energy into electrical, mechanical, hydraulic or other form of energy. The
technical result consisting in enhancing the effectiveness of a WED by increasing the moment
on the shaft of the rotor, is provided as a result of the fact that in the proposed method a rotor
blade is made in the form of a wing with a thick aerodynamic profile and a vortex system for
10 control of the boundary layer is arranged on the rear part of the blade opposite the side facing
the wind, this system consisting of longitudinal cavities with central bodies forming annular
channels, and suction withdrawal of air is carried out from each cavity and each central body
through air vents into receivers, which connect air ducts to a low pressure receiver inside the
blade, air from which due to centrifugal forces of a rotating blade and also because of the
15 difference in pressure occurring at a blade shank and end of the blade because of the large
sum speed of the air at the end of the rotating blade, is suction withdrawn to the end of the
blade through an air duct, wherein plates limiting the air flow flowing off along the blade are
mounted inside the cavity and on the outer surface of the blade with a certain spacing between
them. The proposed method for enhancing the effectiveness of a rotor blade of a wind energy
20 device is realized in one of the variants.